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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/076,075

02/15/2002

Bong-gi Kim

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21171

7590

05/26/2004

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EXAMINER

AGUSTIN, PETER VINCENT

ART UNIT

PAPER NUMBER

2652

6

DATE MAILED: 05/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/076,075

Applicant(s)

KIM, BONG-GI

Examiner

Peter Vincent Agustin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☒ Claim(s) 11-14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claims 11-14 objected to because of the following informalities:

Claim 11: "the second operation" should be --the first allowing method operation--.

Claim 12: "the second" should be --the first allowing method operation--.

Claims 13 & 14: "the fourth operation" should be --the diffracting method operation--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 10, 11, 13 & 14 rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (hereafter Kim) (US 6,337,841).

In regard to claim 10, Kim discloses (figure 3) a method of compensating for a deviation between optical axes of light sources, the method comprising: applying a voltage to one of the light sources (121) to cause a light beam (II) to be emitted; allowing the emitted light beam to be reflected from a first surface of a beam splitter (131), transmitted through an objective lens

(137), focused on a recording medium (100), and reflected from the recording medium; allowing the light beam reflected from the recording medium to be incident on a second surface of the beam splitter; diffracting the light beam which is incident on the second surface of the beam splitter into a relatively more +1-order diffracted light beam and relatively less residual light (column 6, lines 3-11) when the light source emitting the light beam is optically closer to the recording medium than the other light source (111), and diffracting the light beam (I) which is incident on the second surface of the beam splitter into a relatively more zero-order diffracted light beam and relatively less residual light (column 5, line 61 thru column 6, line 11) when the light source emitting the light beam is optically farther from the recording medium than the other light source; and focusing the zero-order diffracted light beam or the +1-order diffracted light beam transmitted through the second surface on a photodetector (141).

In regard to claim 11, Kim discloses that the light beam emitted from the light source is incident on the first surface of the beam splitter at an angle of 45 degrees (see figure 3, elements 131 & 113).

In regard to claim 13, Kim discloses that the zero-order diffracted light beam is at least 70% as much as the second light beam (column 5, line 61 thru column 6, line 11).

In regard to claim 14, Kim discloses that the +1-order diffracted light beam is at least 70% as much as the first light beam (column 6, lines 3-11).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-8 & 15-17 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Ono et al. (hereafter Ono) (US 5,659,531).

In regard to claim 1, Kim discloses an optical pickup apparatus (figure 3) comprising: a first light source (121) to generate a first light beam (II); a second light source (111) to generate a second light beam (I) whose optical axis is parallel to the optical axis of the first light beam, the second light source being disposed optically farther from a recording medium (100) than the first light source; a photodetector (141) to receive the first light beam and the second light beam which are emitted from the first and second light sources, respectively, and which are reflected from the recording medium and performing photoelectric conversion; an objective lens (137) to focus the first light beam and second light beam on the recording medium, the objective lens being disposed on an optical path between the first and second light sources and the recording medium; and a beam splitter (131) disposed on an optical path between the objective lens and the photodetector, the beam splitter having a first surface to reflect the first light beam and the second light beam toward the objective lens and simultaneously transmitting the first light beam and the second light beam. However, Kim does not disclose that the beam splitter has a second surface on which a hologram is formed. Kim discloses a hologram (135) separately provided from the beam splitter, whose purpose is to compensate for a deviation between optical axes of the first and second light beams transmitted through the first surface.

Ono discloses a beam splitter (figure 11A, element 216) having a surface on which a hologram is formed. It would have been obvious to one of ordinary skill in the art at the time of the invention by the applicant to have used the beam splitter/hologram combination of Ono with

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the apparatus of Kim, the motivation being to eliminate the need for a separate hologram, thereby decreasing the size of the optical pickup.

In regard to claim 2, Kim discloses that the hologram (figure 3, element 135) is formed to diffract the first light beam into a relatively more +1-order diffracted light beam (column 6, lines 3-11) and relatively less residual light, and diffracting the second light beam into a relatively more zero-order diffracted light beam (column 5, line 61 thru column 6, line 11) and relatively less residual light.

In regard to claim 3, Kim discloses that the first surface is set such that the first light beam and the second light beam are incident thereon at an angle of 45 degrees (see figure 3, elements 131 & 113).

In regard to claims 4 & 5, Ono and hence the obvious combination noted above, inherently discloses a coating formed on the first surface so that approximately 50% of the first and second light beams is reflected and approximately 50% thereof is transmitted (column 10, lines 40-60).

In regard to claim 6, Kim discloses that the hologram is formed such that the +1-order diffracted light beam is at least 70% as much as the first light beam (column 6, lines 3-11).

In regard to claim 7, Kim discloses that the hologram is formed such that the zero-order diffracted light beam is at least 70% as much as the second light beam (column 5, line 61 thru column 6, line 11).

In regard to claim 8, Kim discloses a collimating lens (figure 3, element 133) on an optical path between the beam splitter and the objective lens.

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In regard to claims 15 & 16, Kim discloses an optical pickup apparatus (figure 3) comprising: a first light source (121) to generate a first light beam (II); a second light source (111) to generate a second light beam (I) whose optical axis is parallel to the optical axis of the first light beam, the second light source being disposed optically farther from a recording medium (100) than the first light source; a photodetector (141) to receive the first light beam and the second light beam which are emitted from the first and second light sources, respectively, and which are reflected from the recording medium and performing photoelectric conversion; an objective lens (137) to focus the first light beam and second light beam on the recording medium, the objective lens being disposed on an optical path between the first and second light sources and the recording medium; and a beam splitter (131) disposed on an optical path between the objective lens and the photodetector, the beam splitter having a first surface to reflect the first light beam and the second light beam toward the objective lens. However, Kim does not disclose that the beam splitter has a second surface which receives the first and second light beams reflected from the recording medium, to compensate for a deviation between optical axes of the first and second light beams transmitted through the first surface, wherein the second surface comprises a hologram. Kim discloses a hologram (135) separately provided from the beam splitter, whose purpose is to compensate for a deviation between optical axes of the first and second light beams transmitted through the first surface.

Ono discloses a beam splitter (figure 11A, element 216) having a surface on which a hologram is formed. It would have been obvious to one of ordinary skill in the art at the time of the invention by the applicant to have used the beam splitter/hologram combination of Ono with

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the apparatus of Kim, the motivation being to eliminate the need for a separate hologram, thereby decreasing the size of the optical pickup.

In regard to claim 17, Kim inherently discloses a coating formed on the first surface of the beam splitter (figure 3, element 131) so that a portion of the first and second light beams is reflected (see arrows proceeding towards photodetector 141) and the remaining portion of the first and second light beams is transmitted (see lines proceeding towards optical disc 100).

7. Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim & Ono as applied to claim 1 above, and further in view of Kubota et al. (hereafter Kubota) (US 4,592,038).

For a description of Kim & Ono, see the rejection above. However, Kim & Ono do not disclose a concave lens on an optical path between the beam splitter and the photodetector.

Kubota discloses a concave lens (figure 1, element 9) on an optical path between a beam splitter (4) and photodetectors (10-12), the concave lens being provided in order to facilitate convenient positioning of the photodetectors. It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have placed the concave lens of Kubota between the beam splitter and photodetector of Kim & Ono, the motivation being to facilitate convenient positioning of the individual subdetectors, thereby enabling higher reproduction accuracy.

8. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim as applied to claim 10 above, and further in view of Ono.

For a description of Kim, see the rejection above. Furthermore, Kim discloses that part of the light beam is reflected from the first surface of the beam splitter (see claim 17 rejection

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above). However, Kim remains silent to whether 50% of the light beam is substantially reflected from the first surface of the beam splitter.

Ono discloses 50% of a light beam being reflected from a first surface of a beam splitter (figure 16, element 218) (column 10, lines 40-60). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have reflected 50% of the light beam of Kim as suggested by Ono, the motivation being to enhance the reading of the signal-to-noise ratio, thereby enabling higher reproduction accuracy.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Muranishi et al. (US 5,448,536) (figure 26) and Taniguchi et al. (US 5,051,974) (front cover) disclose a beam splitter attached with a diffraction grating.

Lee (US 5,050,153) discloses a semiconductor laser optical head assembly having a hologram that serves as a beam splitter.

Takeda et al. (US 5,648,950) discloses a hologram integrated with a beam splitter to separate a plurality of polarized reflected light beams.

Ando et al. (US 6,392,977) discloses an optical pickup with a hologram to limit the aperture of two light beams with different wavelengths.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Vincent Agustin whose telephone number is (703) 305-8980. The examiner can normally be reached on Monday thru Friday 9:00AM - 5:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PVA
04/23/2004



W. H. YOUNG
PRIMARY EXAMINER